THE PLANKTON NEWS

THE NEWSLETTER OF THE SOUTHEAST PHYTOPLANKTON MONITORING NETWORK

Volume 5, Issue 1 June 2006

Letter from the Program Lead

The staff at SEPMN has had a busy winter season. First off, we are currently collaborating with the National Coastal Data Development Center (NCDDC) to develop a centralized website, accessible on a passworded basis which will include an internet map service to display sample sites and survey results as well as web-based tools for communication between the different volunteer groups and us. The development of this new website is currently underway and hopefully will be finished before the annual refresher courses in August. Dr. Scott Cross of NCDDC has been our main point of contact and will be presenting this new Arc-GIS website to you all.

As you may all know, Julie Cahill recently left the program for a position in North Carolina. She is currently the Newfound Watershed Resource Coordinator in Buncombe County, NC. More about Julie's new job on page 4.

Since the beginning of 2006, Dr. Alexander Vershinin from the Russian Academy of Sciences P.P. Shirshove Institute of Oceanology has been visiting the Marine Biotoxins Program. I have been collaborating with Alexander since 2000 examining the phytoplankton of the Black Sea. On page 8 of the Plankton News is additional information on Alexander along with his science and educational programs.

Wendy recently returned from the Ocean Sciences Meeting in February. She gave a presentation on the program which was very well received. This presentation utilized all your hard work to a national audience.

I would like to thank each of the volunteer groups for participation in SEPMN. Without your help, this program would not be a success!

Steve

Microscopy Workshop

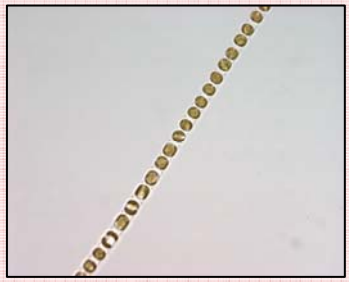
Fifteen middle school and high school science teachers in South Carolina recently participated in a one-day workshop to improve their microscope skills. The workshop – held on January 20th and designed by scientists and outreach specialists from NOAA's Marine Biotoxins Program - included presentations and hands-on training using microscopes loaned by Olympus. The workshop provided teachers with microscopy theory and techniques to increase resolution which they can transfer to their students. Workshop participants received an instruction manual which included presentations, instructions for maintenance and repair of microscopes, techniques for improving resolution, classroom activities, and micrographs.

One teacher expressed, "It was great to be in an environment of cutting-edge technology and research!" Another teacher explained, "I can use this material to teach SC science standards in my classroom." The success of this workshop was demonstrated by colleagues of the participants calling and requesting another workshop. One participant stated that she was excited to see NOAA taking the lead on providing advanced outreach programs not normally available to teachers. We plan to offer additional workshops to teachers in SC, NC, and GA in the future.

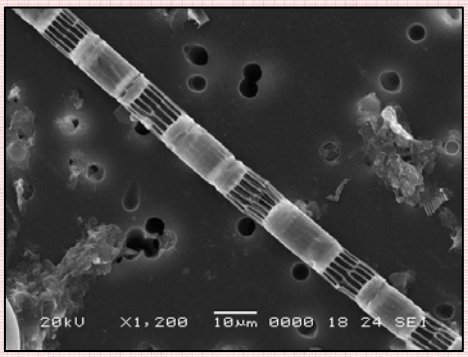
Inside This Issue

Species Spotlight

Skeletonema costatum



S. costatum (Greville) Cleve is a centric diatom which produces characteristic bead-like chains. Between each cell are many strutted processes which connect each cell in the chain. This species has been on the SEPMN species list since the inception of the program in 2001. Since that time, this species has been reported in high abundance and bloom concentrations mainly during the spring and fall months. The number of observations of this species usually peaks in September and October.



Annual Volunteer Refresher Training Dates

Mark your calendars as the dates for the SEPMN annual volunteer trainings have been set!

SATURDAY, AUGUST 12: FT. JOHNSON MARINE COMPLEX, NOAA LABS, CHARLESTON, SC
SATURDAY, AUGUST 19: SAPELO ISLAND, GA
SATURDAY, AUGUST 26: ARMY CORPS OF ENGINEERS FIELD RESEARCH FACILITY, DUCK, NC
SUNDAY, AUGUST 27: CARTERET COMMUNITY COLLEGE, MOREHEAD CITY, NC
WEDNESDAY, SEPTEMBER 6: JEKYLL ISLAND 4-H CENTER, JEKYLL ISLAND, GA
SATURDAY, SEPTEMBER 9: COASTAL CAROLINA UNIVERSITY, CONWAY, SC
SATURDAY, SEPTEMBER 16: BURTON 4-H CENTER, TYBEE ISLAND, GA (MAKE-UP DATE)

CONGRATULATIONS TO MARGARET OLSEN!

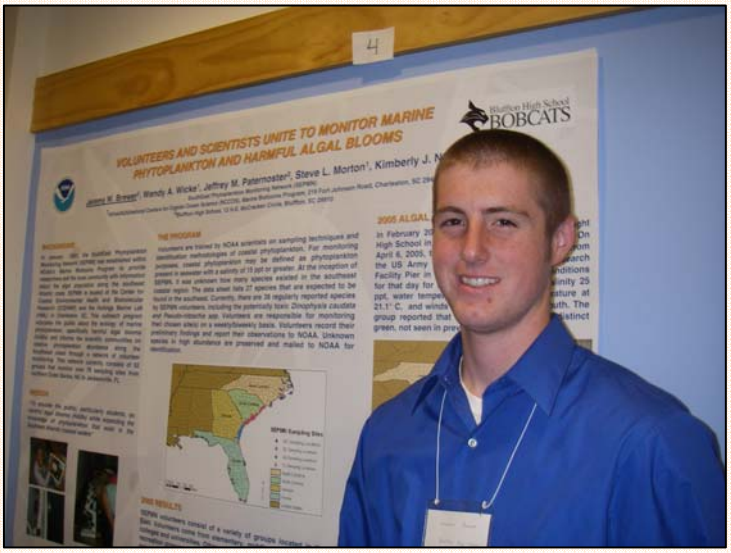
Margaret Olsen, SEPMN Georgia liaison and marine educator extraordinaire, will be given the Eugene Odum Lifetime Service Award from the Environmental Educational Alliance of Georgia during their May 2006 meeting. The late Eugene Odum, University of Georgia, is often described as the father of modern ecology and has written some of the seminal papers in this field.

Margaret has been a teacher and educator for 36 years. She has taught kindergarten, middle school science, and high school classes in oceanography, meteorology, geology, astronomy, biology, physical science, and coastal ecology. In 2003, Margaret began working for the Center for Ocean Science Education Excellence – SouthEast (COSEE-SE) where she has taken on the task of teaching teachers how to incorporate hands-on experiences in the science classroom. “One of my main beliefs about teaching science is that both teachers and students need to experience what they learn.” Margaret is also very adamant about giving students opportunities to participate in field experiences.

Margaret has authored several textbooks, lab manuals, and science classroom activity guides, including science curriculum for the Sapelo Island National Estuarine Research Reserve and for the Georgia Department of Natural Resources Coastal Resources Division.

Her passions include her husband Mickey, her children and grandchildren, and anything having to do with the ocean. From all of us at SEPMN, congratulations on this well- deserved award!!!!

Recently, Jeremy Brewer, a high school junior from Bluffton High School was selected to attend the Southeast Estuarine Research Society Meeting in St. Augustine, FL and present a poster about SEPMN activities. Here is his report of his experience. Jeff Paternoster, Jeremy's science teacher, also attended the meeting.



In February of 2006, my junior year in high school, I was selected to present the Southeast Phytoplankton Monitoring Networks (SEPMN) research at the biannual Southeastern Estuarine Research Society (SEERS) meeting. SEERS is an organization that researches estuaries in the United States, some are designated to be of national importance. In order to apply for this opportunity I had to complete an application which included an essay on why I wanted to attend and letters of support from my principal and my parents. The opportunity to attend the SEERS meeting was open to all students who have participated in SEPMN. SEPMN is the educational outreach component of NOAA's Marine Biotoxins Program. The program educates the public about the ecology of marine phytoplankton, specifically harmful algal blooms (HABs), and informs the scientific community on phytoplankton abundance along the southeast coast through volunteer monitoring. Currently, there are 65 volunteer groups who sample 76 sites from North Carolina to Florida and report data to NOAA.

The 2006 SEERS meeting changed my outlook on life after high school. Before the meeting, I had decided to enter the military, but now I plan on attending college and majoring in marine biology. I really enjoyed making new friends with Bill Stevenson from Coastal Carolina, Ross Garner from The Citadel, and Alan Flemming from the College of Charleston. As a result of these conversations, I intend on visiting the College of Charleston, The Citadel, and Coastal Carolina University this spring to learn more about their marine science programs.

The first day we arrived in St. Augustine, we went to the Castillo de San Marcos. The castle was built between 1672-1695 and served primarily as an outpost of the Spanish empire and later became a way to protect the sea route for treasure ships going back to Spain. Later that evening was the meeting social. This is where I first met people from different colleges and learned about their research. It was interesting that these became the people that I interacted with the most during the three day meeting.

The next day we went to the Guana Tolomato Matanzas NERR Environmental Education Center in Point Vedra Beach. The first session started at 8:15 and I learned the most during Alan Flemming's presentation about PAHs (Polycyclic Aromatic Hydrocarbons) in stormwater retention ponds. I learned that PAHs are a product of incomplete combustion and that some PAHs are carcinogenic. PAHs do not normally breakdown between the road and the water.

Towards the end of the second session I was beginning to get nervous because the poster session was coming up. Beforehand, I thought most of the questions would be very technical, but the hardest question asked was "what is the most common misconception about algal blooms that people have?" My response was simple; most people think all blooms are bad, when they are not! One of the questions I got often was "you are only in high school?" After answering this question a couple of times I began to feel more comfortable and started telling them more about the SEPMN project. At the end of the poster session I felt confident in answering questions and began asking questions of other poster presenters. One of the posters I was really interested in was "Ghost Fishing by Blue Crab Pots" by Bonnie Coggins of the University of South Carolina. I found it fascinating to learn that commercial and recreational fishing gear that has been lost continues to catch crabs, with a catch rate of 3.6 crabs per week.

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After a day of presentations we went to the banquet at Marineland. When we arrived the first thing I noticed was the huge pool with dolphins. It was cool that there were dolphin experts to tell us anything we wanted to know about the dolphins. I never knew dolphins could live to be 53 years old in captivity. I learned about dolphin memory when they told us that one of the dolphins still knew some tricks that it had learned years ago while being a "circus dolphin."

The next day we got an early start to the NERR Environmental Education Center. We went for a hike along the trails and I learned the names of a few plants. One of the plants that I remember most was the wax myrtle because people use to make candles out of the berries and I thought that was very neat. After the hike we went and listened to the presentations for the day. Straud Armstrong, from the South Carolina Department of Natural Resources, presented "A Study to Examine the Potential for Restoring Flow of a Salt Marsh Creek at the Edisto Beach Causeway, South Carolina." This presentation was most interesting to me because I did not know what a causeway was. SCDNR is experimenting with removing causeways to drastically change the flow of water in the marsh which alters the dissolved oxygen concentration. Now each time I drive over a causeway I think of what I learned from Straud at the SEERS meeting.

At the end of the meeting, when all the presentations were completed, the SEERS president gave out three awards. The first award was given to Tracy Modeste, an undergraduate student from Savannah State University, for her poster entitled "The Effects of the Parasite *Probopyrus pandalicola* on the Survival of the Grass Shrimp *Palaemonetes pugio*." The second award was given to Ross Garner, an undergraduate student from The Citadel, for his session presentation entitled "Survey of PAH Contamination in South Carolina Tidal Creek Sediments, Tubificid Worms, and Shrimp: Potential for Dietary Transfer to Humans." Unexpectedly the third award was given to me, Jeremy Brewer, a junior at Bluffton High School. Marie DeLorenzo, SEERS president, presented me with this Honorable Mention Award for being the only high school student who presented a poster.

After three days of experiencing the SEERS meeting, we left for home. When I got home I had to tell my parents about every thing that happened during the meeting. They were really glad that I had the opportunity to go on this trip and learn about what scientists are studying. I was glad to be a part of the SEERS meeting because I got to meet people and I learned a lot about what it takes to do science at the college level. I really enjoyed presenting SEPMN's research, but next time I want to present a poster of my own research. I am very grateful for the amount of effort that went into making the 2006 SEERS meeting a success. Thank you for giving me this opportunity and I will see you in Savannah, GA for the SEERS fall meeting.

A lot of you have been inquiring as to what Julie Cahill has been doing these days. She is currently the Watershed Resource Coordinator for Buncombe County, NC. Here is what she has been up to:

My main responsibility here is a 22,250-acre watershed called Newfound Creek. The Buncombe County Soil & Water Conservation has received a new grant of $415,000 from Clean Water Management Trust Fund (CWMTF) to improve water quality in Newfound Creek. Newfound Creek is listed on the EPA State 303d list as being severely impaired by non-point source pollution (NPS), caused by sediment and fecal bacteria contamination. Non-point source pollution is caused when water in the form of runoff flows across the earth's surface and picks up natural and man-made pollutants, depositing them directly into streams, lakes and subsurface waters. The main sources of sediment are bare eroding areas, construction sites, cropland, eroding stream banks and dirt roads. Fecal bacteria can come from failing septic systems, straight pipes, livestock in streams or wildlife. Excessive nutrients in streams can come from use of chemical fertilizers, graywater pipes, straight pipes or animal wastes.

Former SEPMN Outreach Specialist Julie Cahill

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(Julie Cahill, continued from page 4)

Cost share is used for installing conservation practices such as seeding down eroding areas, eliminating erosion on roadside ditches and banks, excluding livestock from streams, building waste/feed storage structures, waste management systems and other practices that improve water quality. The district can pay up to 75% of most projects installed, 100% if agricultural projects are installed with small setbacks along streams.

I am in the process of constructing 3 agriculture structures and water tanks to contain cattle manure and keep cattle out of the creek. I am also regrading and adding proper drainage to many roads and driveways for residents to help with sediment and land erosion. There aren't any hurricanes here but people are leaning that there is a whole other set of problems when you build your house on a mountain.

Volunteer Spotlight
Allene Barans, Porter-Gaud School, Charleston, SC

SEPMN has chosen to feature Allene Barans in this issue's Volunteer Spotlight. Allene Barans is a 9th grade (college prep and honors) biology teacher at Porter-Gaud School in Charleston, SC. Allene and her students have been volunteering for SEPMN on a regular basis since September 2001. Since then, Allene has guided hundreds of students through the world of phytoplankton. She has recently announced her retirement and SEPMN awarded her with an enlarged, framed scanning-electron image of a phytoplankter for her 5-year dedication to monitoring.

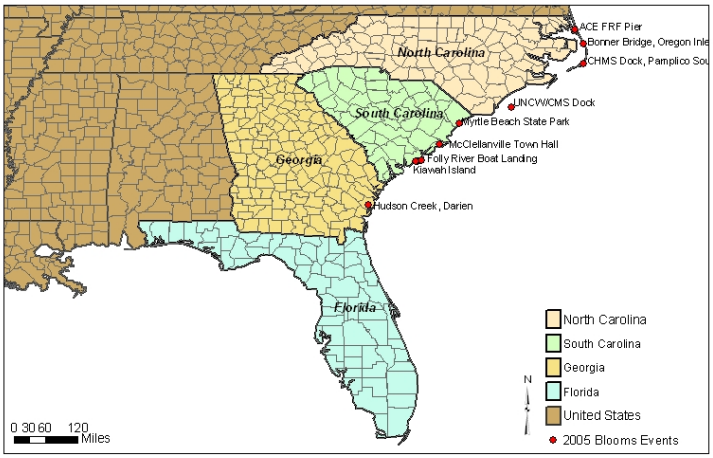
Allene has been teaching high school and college students since the mid-1960s. She was a teaching assistant and instructor at Ohio State University, The College of William and Mary in Virginia, and Trident Technical College in Charleston, SC. She began teaching high school in the late 1980s at Bishop England High School in Charleston, SC and moved to Porter-Gaud School in 1999. She is an active member of various professional organizations such as the National Science Teachers Association, National Association of Biology Teachers, National Marine Educators Association, SC Assoc. of Biology Teachers, and the South Carolina Science Council.

When asked what her passions are, she stated that they are work-related and include: "to make the study of biology appealing to students (by introducing unusual, hand-on experiences) and to foster in young people a love of and respect for the natural world."

Finally, there is life after retirement. Allene has big plans for the future; she does not plan on leaving education entirely. She expects to maintain contact with science education and young people through volunteer work and substitute teaching. She is planning on going back to school herself to take all those classes that she didn't have time for in the past: ornithology, invertebrates, and lower plants. She also has plans to travel in the U.S. and Europe, spend time on her property in N.Y. with husband Charles and the rest of her family. We wish her all the very best! Thanks Allene for your dedication and hard work!

SEPMN Program Coordinator Wendy Wicke presents volunteer Allene Barans with an appreciation award

2005 Algal Bloom Events



SEPMN Update

2005 was a very busy year for SEPMN. SEPMN staff members presented at various conferences and workshops, which included:

- The National Marine Educators Association, Maui, Hawaii
- The South Carolina Marine Educators Association, Litchfield Beach, SC
- The Mid-Atlantic Marine Educators Association, Beaufort, NC
- The National Science Teachers Association, Dallas, TX
- The South Carolina Science Council, Myrtle Beach, SC
- The Southeastern Estuarine Research Society, Charleston, SC
- The Hurst Marine Biotoxins Meeting, West Boothbay Harbor, Maine
- South East Portal to Ocean Research for Teachers, St. Marys, GA

During the calendar year, SEPMN had approximately 3000 participants that participated in a workshop, presentation, or volunteered in the monitoring program.

Currently, there are 76 sampling sites being monitored in 4 states. There are a total of 65 volunteer groups in 4 states.

In North Carolina, there are 17 volunteer groups sampling 17 sites. These groups include volunteers from 2 aquariums, 1 maritime museum, 2 colleges, 2 elementary schools, 3 middle schools, 6 high schools, and 1 K-12 school.

Continued…

The sampling sites are concentrated in the areas of Wilmington, Beaufort/Morehead City, and the Outer Banks area. A total of 28 people participate in monitoring activities (this does not include students but only the group liaisons).

In South Carolina, there are 31 volunteers groups sampling 43 sites. These groups include volunteers from 1 aquarium, 1 college, 3 state parks, 6 civic groups, 9 high schools, 1 middle school, 7 private schools, and 1 federal agency (NOAA). Sampling sites are scattered across the coastal regions of SC from North Myrtle Beach to Beaufort, SC. A total of 45 people participate in monitoring activities (this does not include students but only group liaisons).

In Georgia, there are 14 volunteer groups sampling 16 sites. These groups include volunteers from 2 universities, 2 elementary schools, 3 county extension offices, 2 4-H Centers, 1 civic group, 1 private school, 2 high schools, and 1 private citizen. Sampling sites are scattered across the coastal regions of GA from Savannah to St. Marys, GA. A total of 25 people participate in monitoring activities (this does not include students but only group liaisons).

In Florida, there is 1 volunteer group sampling 1 site. This group is a high school based in Jacksonville, FL. There is 1 teacher that serves as the group liaison.

2005 Data

In 2005, there were 16 algal blooms that were reported by volunteers. There were 10 blooms in NC, 5 in SC, and 1 in GA. Reported bloom species included *Coscinodiscus spp., Rhizosolenia spp., Akashiwo sanguinea, Asterionella spp., Skeletonema spp., Thalassionema spp., Chaetoceros spp.,* and *Pseudo-nitzschia pseudodelicatissima.* The most commonly observed species on a monthly basis was *Coscinodiscus spp.*

There were no fish kills reported. The NOAA Labs in Charleston performed tests during and after the *pseudo-nitzschia pseudodelicatissima* bloom and found no toxins in the phytoplankton and oyster samples (see Plankton News June 2005 Edition (Volume 4, issue 2) at http://www.chbr.noaa.gov/PMN/PlanktonNews/June%202005%20draftfinal.pdf)

Welcome to our New Outreach Specialist: Jeff Paternoster

SEPMN welcomes Jeff Paternoster as our new outreach specialist. Jeff comes to SEPMN after a 10-year career in public education, where he taught science at both the middle school and high school level. Born and raised in central Illinois, he received his Bachelor of Science degree in environmental biology from St. Ambrose University in Davenport, Iowa. Jeff and his wife, Heather, moved to South Carolina 5 years ago and joined SCPMN. For the past 4 years, his students have monitored the May River in Bluffton, SC. SEPMN is excited to have Jeff as part of our staff!

He can be contacted at Jeff.Paternoster@noaa.gov or at 843-762-8657.

2006 Upcoming Events

- ***June 17 – 23, 2006:*** COSEE-SE Coastal Legacy Program, Penn Center, St. Helena Island, SC
  - SEPMN will be conducting a short phytoplankton workshop on 6/20/06
- ***June 20 – 25, 20006:*** Coastal Ocean Observing Workshop: Taking the Pulse of our Coastal Ocean, Skidaway Institute of Technology, Savannah, GA
  - SEPMN will be conducting a harmful algal bloom program on 6/22/06
- ***June 15 – 23, 2006:*** National Marine Educators' Association Annual Conference, Long Island, New York
  - SEPMN will be conducting a workshop on phytoplankton and HABs on 7/19/2006
- ***September 25 – 29, 2006:*** The American Zoo and Aquarium Association Annual Conference, Tampa, Florida
  - SEPMN will be co-presenting a session on microfauna on 9/29/06
- ***September 29 – October 1, 2006:*** Mid-Atlantic Marine Educators' Association Annual Conference, Northeast, Maryland
  - SEPMN will be conducting a recruitment workshop for new volunteers in Maryland and North Carolina
- ***October 20 – 22, 2006:*** South Carolina and Georgia Marine Educators' Association Joint Conference, Seabrook Island, SC
- ***November 1 – 3, 2006:*** South Carolina Science Council Annual Conference, Myrtle Beach, SC

Living Black Sea

Since 1999, Dr. Alexander Vershinin of the P.P. Shirshov Institute of Oceanology has been collaborating with the Marine Biotoxins Program to conduct phytoplankton surveys along the Black Sea coast of Russia. This research has resulted in several publications including the first report of HAB toxins from this area.

Dr. Vershinin instructing students in macroalgal identification at camp Shtormovey.

One of the sample sites used in this study is north of the town of Tuapse where the Russian Federation conducts a children's camp named Shtormovy. Dr. Vershinin heads an educational program the "Living Black Sea" to teach marine ecology to the participants of the camp. Since the inception of the program, over 60,000 children have participated in this program. The program is year round, including three ecological terms when young natural scientists from all over Russia are selected on the basis of their excellence and merits of their research projects. Like SEPMN, students attending camp Shtormovy participate in the sampling and identification of plankton species.

Russian students examining water samples.

In 2005, Dr. Vershinin was awarded European Molecular Biology Organization (EMBO) award for communication in life sciences in recognition of his exceptional work in communicating marine biology to the young, in particular for his "Living Black Sea" education initiative and book on marine science, "Life of the Black Sea". This book was produced with school children in mind, although, since its publication, it has also become popular with researchers. Packed with fascinating color photos "Life of the Black Sea" illustrates the full scope of marine life from the biology of marine organisms to environmental problems in the region.

Dr. Vershinin's marine science book entitled "Life in the Black Sea"

For more information regarding the ecology of the Black Sea, research conducted, and the educational program, an interactive web site can be found at: http://blacksea.orlyonok.ru/1.shtml. Many of the pages are in English with additional pages being translated from Russian.

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